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No. VIII.

Extracts from a letter, from William Dunbar Esq. of the Natchez, to Thomas Jefferson, President of the Society.

NATCHEZ, Aug, 22, 1801,

Read December 18th, 1801.

BY the present occasion I have the honor of transmitting you a monthly recapitulation of meteorological observations for the year 1800; to which I have subjoined remarks calculated to convey some idea of the nature of our climate.—I have also attended to a hint dropt in one of your letters respecting the Mississippi, by preparing a short account of that river, but my copyist having fallen sick, I am obliged to defer transmitting it until next post.

I have some time since received notices of fossil bones discovered to the west of the Mississippi, and lately an intelligent French gentleman, Commandant of the Apelousas, informs me, that at three different places of that country, bones have been found which are supposed to resemble those of the big-bone-lick near the Ohio, and at another place that he is well assured that in digging a well, a set of human teeth (*la denture d'un homme*) have been found at the depth of 30 or 35 feet. I have recommended to that gentleman to set on foot a diligent investigation of those objects and if practicable to transmit me specimens of the bones, particularly a jawbone with its included teeth as little mutilated as possible. Should I prove so fortunate as to acquire the possession of any object worthy the attention of the society I shall take an early opportunity of presenting it. Mr. Nolan has formerly given me some intimation of fossil bones of great magnitude being found in various parts of New Mexico.

Your observation of a lunar rain-bow is entirely new to me, but I have often observed a Phenomenon which seems to have been overlooked by Philosophers; it is slightly noticed in Brydone's tour through Sicily and Malta Vol. 1. p. 356. 2d.

Edit. London. This curious and beautiful phenomenon may be seen every fine summer's evening in this and perhaps in all other countries, where serenity is united to a cloudless sky. It is caused by the prismatic effect of the atmosphere upon the sun's departing rays. Soon after sun-set a belt of a yellowish orange colour is seen to extend itself along the eastern horizon, this belt ascends in the same proportion as the sun descends, being about one degree in breadth; in contact with the first, appears a second belt below, of a dark blue colour, and about the same breadth as the first, both belts being tolerably well defined and of a uniform colour throughout: when the double belt has risen a little above the horizon, the azure sky may be seen below, and as the belts continue to ascend they become fainter, until at length the prismatic rays meeting with no vapors sufficiently dense to reflect their colours, the whole phenomenon dissolves into pale celestial light; the belts disappear at about 6 or 7°. of altitude. This phenomenon merits some attention; it exhibits as upon a skreen that species of light, which after a greater angular dispersion, arriving at the moon's orbit, faintly illumines her disk during the time of a total eclipse.

It would seem to result from the above appearances, that if a prism were formed of atmospheric air, the solar ray would be separated thereby into two colours only, a yellow orange, and a blue: it is known to opticians that the compound colour of orange and yellow, and the colour which Newton calls indigo, comprise within themselves the seven primitive colours, that is, united they ought to form white; we ought not therefore to reject this effect of atmospheric air, because dissimilar to the prismatic powers of such diaphanous bodies as are best known to us; modern experiments have shewn that refracting bodies possess very different dispersive powers; and when we reflect upon the heterogeneous nature of our atmosphere, composed of at least three permanently elastic fluids, with the adventitious mixture of perhaps a hundred others, subject from chemical affinity to perpetual resolution and composition, dissolving at all times a great proportion of aqueous fluid, and the whole pervaded by the electric fluid; shall we presume to doubt, that nature has it in her power to compose a refracting body,

whose dispersive powers are equal with respect to the red, orange, yellow, and green making rays, and though greater with regard to the three remaining primitive colours yet perfectly equal among themselves.

WILLIAM DUNBAR.

THOMAS JEFFERSON, PRESIDENT, A. P. S.